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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,329	01/29/2004	Sean D. Monahan	Mirus.041.01	6227

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MIRUS CORPORATION
505 SOUTH ROSA RD
MADISON, WI 53719

EXAMINER	
BARHAM, BETHANY P	
ART UNIT	PAPER NUMBER
1615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/767,329	MONAHAN ET AL.	
	Examiner	Art Unit	
	BETHANY BARHAM	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Summary

Receipt of Applicant's Response and Amended Claims filed on 07/01/08 is acknowledged. Claims 21-24 are pending. Claims 21-24 are rejected.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07/01/08 has been entered.

Applicant's Amendments have overcome the previous prior art rejections of record, except US 4,888,416 which is **maintained**.

NEW REJECTIONS

Claim Rejections – 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21-24 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2003/0235916 ('916) (60/388685 priority date 06/14/02).

The limitations of claims 21-24 are taught:

- '916 teaches the process for the delivery of a polynucleotide to an animal cell in vitro and in vivo a salt stable complex comprising polynucleotide and a cationic surfactant (abstract).
- Example 3 of '916 teaches a preparation of a complex of pDNA in solution and CTAB which is then lyophilized for 3 days. Example 19 also teaches condensation of a pDNA/cationic surfactant (CTAB) complex.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0235916 ('916) (60/388685 priority date 06/14/02).

The limitations of claims 21-24 are taught:

- '916 teaches the process for the delivery of a polynucleotide to an animal cell in vitro and in vivo a salt stable complex comprising polynucleotide and a cationic surfactant (abstract).
- Example 3 of '916 teaches a preparation of a complex of pDNA in solution and CTAB which is then lyophilized for 3 days. Example 19 also teaches condensation of a pDNA/cationic surfactant (CTAB) complex.

Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,482,927 ('927) in view of US 4,888,416 ('416).

The limitations of claims 21-24 are taught:

- '927 teaches a biologically active protein is dissolved in water or a suitable solvent, alone or in combination with stabilizing agents and that the solution is either lyophilized or spray dried to obtain a free flowing powder (abstract).
- '927 teaches that rbST and BSA are preferred, but that any protein or peptide having therapeutic or biological activity can be used (col. 2, lines 50-66).
- Surfactant/stabilizers such as deoxycholic acid and polysorbate 80 are taught by '927.
- Example 5 teaches the making of a stabilized preparation of rbSt and stabilizer alone using deoxycholic acid, polysorbate 80, etc.
- '927 teaches that the complex may be administered in a carrier in vivo such as vegetable and/or mineral oil, and/or any fats and waxes of natural or synthetic

origin, which are deemed suitable as biocompatible materials (col. 4, lines 16-23).

- '927 does not teach in vitro administration, but does teach in vivo.
- '416 is taught above and teaches in vitro and in vivo administration of a protein-detergent complex (col. 4, lines 15-24 and Example 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made that a protein/surfactant complex capable of being used via in vivo administration could also be administered in vitro. A skilled artisan would know that in vitro experiments are often used and desired to simulate in vivo use of the protein products (as '416 teach above). Thus a skilled artisan would know how to take a known technique such a in vitro administration for a similar purpose of delivering a protein/detergent complex and administer the complex of '927 via in vitro administration ('416).

Claims 1-8 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 94/08599 ('599).

The limitations of claims 1-8 and 21-24 are taught:

- '599 teaches a hydrophobic ion-pairing (HIP) complex formed by an anionic surfactant such as sodium dodecyl sulfate (SDS) to a polypeptide, protein or other molecule in solution and that the isolated HIP precipitate can be redissolved in an organic solvent to form a homogeneous solution (abstract, claim 1).

- '599 teaches that SDS is not the only surfactant but that any hydrophobic material that is the salt of an acid can be employed including sulfates, sulfonates, phosphates, carboxylates, etc and alkyl chains of 8-18 carbons (pg. 2, lines 14-20; pg. 17, line 21-pg. 18, line 10) and that CTAB is a cationic detergent that can be used for a negatively charges peptide.
- '599 teaches various proteins such as interleukins, growth factors, etc (pg. 9, lines 9-16).
- '599 teaches that the precipitate is dissolved in an organic solvent such as octanol, ethanol, propylene glycol, etc (pg. 7, line 35-pg. 8, line 4; pg. 10, lines 26-32; pg. 15, lines 17-25).
- Example 17 teaches the administration of a HIP complex dissolved in an organic solution for administration of a protein to a patient.
- '599 does not teach in vitro administration, but does teach administration externally (applied to the skin) or internally by a patient (subcutaneous, oral, injection, etc).
- '416 is taught above and teaches in vitro and in vivo administration of a protein-detergent complex (col. 4, lines 15-24 and Example 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made that a protein/surfactant complex capable of being used via in vivo administration could also be administered in vitro. A skilled artisan would know that in vitro experiments are often used and desired to simulate in vivo use of the protein products (as '416 teach above). Thus a skilled artisan would know how to take a known

technique (in vitro administration) for similar purposes of delivering a protein/surfactant complex and administer the complex of '599 via in vitro administration.

MAINTAINED REJECTIONS

Claims 1-8 and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4,888,416 ('416).

The limitations of claims 1-8 and 21-24 are taught:

- '416 teaches a method of preparing a dried protein product comprising an aqueous solution comprising a mixture of protein and an ionic detergent and drying said protein-detergent mixture (abstract, claim 1).
- '416 teaches that the detergent is an ionic detergent (cationic or anionic) such as an alkyl sulfate, specifically sodium dodecyl sulfate (claims 4-7). '416 teaches that the selection of a cationic or anionic detergent depends on whether the protein of interest is characterized by positive or negative changes and that the anionic detergent will have an alkyl group of up to about 16 carbon atoms (col. 4, lines 1-10, Examples). The instant specification teaches that functional groups such as "steric stabilizers" include alkyl chains (p. 17, lines10-13), and as such a detergent with an alkyl chain as taught by '416 meets the limitation of claim 3.
- '416 teaches polypeptides and proteins, both natural and synthetic proteins and polypeptides including those produced using recombinant DNA techniques and biologically active derivatives, specifically bovine or porcine somatotropin (col. 2, lines 46-64).

- '416 teaches that prior to administration to a living being via intravenous injection or infusion pump the dried product is added to a solution and Examples teach adding to PBS (col. 4, lines 15-20 and Examples). '416 teaches in vitro experiments desired to simulate in vivo use of the protein products show that the detergent does not adversely addect the bioactivity of the protein (col. 4, lines 15-24). Example 2 teaches administration to rats.

Response to Arguments

Applicant's arguments with respect to claims 21-24 have been considered but are moot in view of the new grounds of rejection necessitated by applicants' amendments. Applicant's argue that '416 does not teach dissolving the dried salt complex with an organic or organic/aqueous solvent or in vitro administration. '416 teaches adding the dried complex to solution for intravenous injection and Examples teach wetting the complex with PBS and/or Buffer A (col. 4, lines 15-20 and Examples). Table 1 involved in vitro experimentation of the complex. As such the rejection is maintained.

Further Applicant has argued that '599 or '927 do not teach in vitro administration. Both '599 and '927 teach delivery to a cell and then teach various known routes of administration and give examples of injections, etc; since in vitro administration is a known technique in the art it is not unobvious to administer a protein/detergent complex via a in vitro, a known method of administration.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BETHANY BARHAM whose telephone number is (571)272-6175. The examiner can normally be reached on M-F from 8:30am to 5pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on 571-272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bethany Barham
Examiner-1615

/Michael P Woodward/
Supervisory Patent Examiner, Art Unit 1615